

MATSUMOTO - APPLICATION NO. 09/688,695 .
Preliminary Amendment


REMARKS

Minor corrections in the specification have been corrected. No new matter has been entered.

Early and favorable action is earnestly solicited.

Respectfully submitted,
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By: _____


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Enclosure: Appendix

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE
IN THE SPECIFICATION

Page 2, paragraph beginning in line 3:

Meanwhile, among digital still cameras, there is known a camera having a diaphragm blade. In this case, there are two types of diaphragm mechanisms. One is adapted to have a plurality of diaphragm blades and enabled to continuously change the diameter of an exposure aperture. The other is adapted to selectively enter a preliminarily prepared aperture of a predetermined diameter into a proper exposure aperture. In either of the cameras respectively having the diaphragm mechanisms of these types, there are two manners of performing [a diameter] an exposure aperture control operation. One is to start an exposure aperture control operation in a stage in which a power supply switch is closed. The other is to perform the exposure aperture control operation after the release button is depressed, and before photographing is started. Moreover, recently, in most of the cameras, a diaphragm mechanism is actuated by a motor.

Page 7, paragraph beginning in line 13:

To achieve the foregoing object, according to an aspect of the present invention, there is provided a shutter for digital still cameras, which comprises a motor having a rotor constituted by a two-pole permanent magnet integrally provided with a driving pin at a radial position thereof in such a manner as to extend in parallel with a rotation shaft thereof that reciprocatingly moves by a predetermined rotational angle from an initial position correspondingly to a direction, in which electric current is supplied to a stator coil, two

shutter blades being operative to relatively operate together with the driving pin and to perform operations of opening and closing the exposure aperture, a plurality of magnetic holding means, disposed separately from one another in such a way as to face peripheral surface of each magnetic pole of the rotor, and configured so that an attractive force caused from a magnetic force of the rotor acting between the rotor and each of the plurality of magnetic holding means is exerted in one of directions of rotation of the rotor in a corresponding one of angular regions, the border between which corresponds to a midpoint angular position in the rotational angle, and pushing means for maintaining a small-diameter exposure aperture regulating state, which is caused by the two shutter blades, in cooperation with the attractive force by directly or indirectly preventing rotation of the rotor when energization of the coil is interrupted at [a diameter] the exposure aperture regulating position at which the rotor rotates beyond the midpoint angular position by a predetermined angle.

Page 13, paragraph beginning in line 8:

A pair of shutter blades 17 and 18 is rotatably connected to each of the shafts 1e and 1f. The driving pin 5b is fitted into elongated holes 17a and 18a of the shutter blades 17 and 18. Thus, when the rotor 5 is turned counterclockwise as viewed in FIG. 1, the shutter blades 17 and 18 perform a closing operation. Thereafter, when the rotor 5 rotates clockwise, the shutter blades 17 and 18 perform an opening operation. Further, each of these shutter blades 17 and 18, which are of the same shape, has a corresponding [one of diameter] exposure aperture regulating portions 17b and 18b for regulating a small-diameter apertures, a corresponding one of pushing means 17c and 18c for stretching the spring 16, and a corresponding one of engaging portions 17d and 18d for maintaining the stretched state of the

spring 16.

Page 26, paragraph beginning in line 22:

As described above, according to the present invention, there is provided a shutter for [a] digital cameras, in which a single moving magnet motor having a permanent magnet rotor adapted to reciprocatingly rotate within a predetermined rotation angle range according to a direction of flow of electric current supplied to a stator coil uses a driving pin integrally provided with the rotor to thereby cause two relatively operating shutter blades to perform opening and closing operations. Moreover, the shutter of the present invention is enabled by an extremely simple configuration to accurately stop each shutter blade at the three positions, namely, the fully opened position, the exposure aperture regulating position, and to preferably maintain the stopped state of each of the shutter blades. Thus, the shutter of the present invention is extremely advantageous in cost reduction and miniaturization of a shutter for digital still cameras. Moreover, the shutter of the present invention can reliably maintain the stopped state of the rotor at all the three positions without energizing the stator coil. Consequently, the shutter of the present invention is extremely advantageous in saving the power consumption of a shutter.

END OF APPENDIX